



Giroux & Associates
Environmental Consultants

NOISE IMPACT ANALYSIS

270 PALAMINO ROAD, FALLBROOK

SAN DIEGO COUNTY, CALIFORNIA

Prepared by:

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INTRODUCTION

This noise assessment has been prepared for a proposed 4-lot subdivision in Fallbrook, California. A remainder parcel with possible future residential development was also analyzed. The property is bounded by Palomino Road to the south and Old Stage Road to the west. Scattered residences surround the property. Traffic on South Mission Road creates a potential noise constraint to the project. Mission Road is forecast to increase traffic volumes by an additional 800 ADT from its current 27,000 ADT traffic load. Any noise changes due to Mission Road traffic will be small. Mission Road also is partially shielded from the project site by intervening structures. Any possible noise constraints to the project will thus derive more from Old Stage Road or Palomino Road when they reach General Plan design capacities rather than from South Mission Road.

There are no simple threshold criteria which allow one to translate daily traffic volumes into a noise impact. However, San Diego County, in its "Guidelines for the Implementation of CEQA" (1991) identifies the following screening criteria that may be indicative of a possible noise impact to "noise sensitive" uses:

- Proximity of the project site to a road with an existing or forecasted Average Daily Traffic (ADT) of 5,000 or more, or,
- Proximity of the project site to any airport (two mile radius)

Because of the existing traffic volumes on South Mission Road and future forecasts exceeding 5,000 ADT on both Old Stage and Palomino Roads, and because the Fallbrook Community Airpark is less than 2 miles from the site, a potential noise impact is presumed to exist. Policy 4b of the Noise Element of the San Diego County General Plan specifies that an acoustical study should be prepared for any proposed noise-sensitive development if a noise impact may exist.

According to the Noise Element of the General Plan, if the acoustical study shows that noise level at any noise sensitive area will exceed CNEL equal to 60 decibels, the development should not be approved unless the following findings are made:

- a. Modifications to the development have been made or will be made which reduce the exterior noise level below CNEL equal to 60 decibels; or
- b. If with current noise abatement technology it is infeasible to reduce exterior CNEL to 60 decibels, then modifications to the development have been or will be made which reduce interior noise below CNEL equal to 45 decibels. Particular attention shall be given to noise sensitive interior spaces such as bedrooms; and,
- c. If finding "b" above is made, a further finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the development without modifications as described in "a" above.

San Diego County DPLU staff has indicated that finding “c.” above constitutes a significant and non-mitigable noise impact. Staff believes that such a finding could only be made in conjunction with the preparation of an environmental impact report (EIR) for the project.

Noise contours for the Fallbrook community airfield have not been developed or adopted. The 60 dB CNEL as the zone of noise constraint is believed to be located within the airport property. No airport noise analysis was performed.

NOISE SETTING

The Mission Road Corridor Noise Study predicted that the future 60 dB CNEL noise contour would extend across the entire site at area build-out. That projection, however, did not take into account the restricted travel speed near the project site, the partial noise blocking action from intervening structures separating the proposed project site from South Mission. An on-site noise measurement was therefore made to establish current conditions and to refine the corridor study noise projections.

Measurements were made at two locations on the site designed to determine the existing noise levels in the rear yards of Parcel 1 and of Parcel 4. Existing measured noise levels were then “ramped up” from an existing 27,000 ADT on South Mission Road to 27,800 ADT at area build-out to determine future conditions in the absence of any site perimeter walls. The net future increase in noise levels is calculated as follows:

$$\begin{aligned}\text{“delta”} &= 10 * \log (27,800 / 27,000) \\ \text{“delta”} &= + 0.1 \text{ dB CNEL}\end{aligned}$$

Changes between existing and future on-site noise exposures are therefore small. The threshold of human noise discrimination even under laboratory conditions is around 1.5dB. The difference between existing and future on-site noise levels is thus imperceptible.

Traffic volumes on Old Stage Road could increase to 7,000 ADT based on its design designation. Palomino Road could increase to 6,000 ADT. The traffic noise level increase from these roadways is calculated as follows:

$$\begin{aligned}\text{Old Stage Road:} \quad & \text{Future ADT} = 7,000 \quad \text{Existing ADT} = 2,544 \\ \text{“delta”} &= 10 * \log (7,000 / 2,544) \\ &= +4.4 \text{ dB}\end{aligned}$$

$$\begin{aligned}\text{Palomino Road:} \quad & \text{Future ADT} = 6,000 \quad \text{Existing ADT} = 1,073 \\ \text{“delta”} &= 10 * \log (6,000 / 1,073) \\ &= +7.5 \text{ dB}\end{aligned}$$

Existing on-site noise levels are thus dominated by South Mission Road, but future levels may be more influenced by local traffic.

Measurements of existing conditions were made continuously for 24+ hours from September 16-17, 2004, using digital recording sound level meters. Meters were calibrated before and after the measurements period. The results of the noise measurements are shown in Table 1.

Table 1
On-Site Noise Monitoring Summary (dBA)

Parameter	Parcel 4	Parcel 1
24-Hour CNEL	62	57
Peak 1-Hour Leq	62	60
When Observed	7-9 a.m.	8-9 a.m.
2nd Highest Leqs	61	57
When Observed	2-6 p.m.	10 a.m. - noon
Minimum Leq	48	45
When Observed	1-3 a.m.	0-2 a.m.

Note: Hourly Measurement Detail in Appendix

Existing levels on Parcel 4 exceed the 60 dB CNEL exterior standard and will require mitigation. Levels of 57 dB CNEL on the eastern property line are within County standards. Unless substantial noise increases were to result due to increased volumes on Old Stage Road or Palomino Road, no exterior mitigation is needed on Lot 1.

The effects of Mission Road traffic noise on the project site can not be accurately modeled due to variable partial terrain and structural interference. A short-term noise measurement was therefore made to explicitly isolate the noise contribution from South Mission Road. The additional noise measurement was made on the southwest corner of the property at the remainder parcel on November 30, 2005, from 1 – 2 p.m. The meter was temporarily disabled when a vehicle approached on Old Stage or Palomino, and then resumes when the vehicle was no longer audible. Because Old Stage is currently closed at Palomino for construction, very few vehicles passed during the measurement hour. The results of the direct South Mission Road traffic noise contribution were as follows:

LEQ	=	56 dB	L10	=	59 dB
Lmax	=	68 dB	L50	=	54 dB
Lmin	=	49 dB	L90	=	52 dB

Monitoring experience has shown that 24-hour weighted CNELs can be reliably estimated from mid-day LEQs by the addition of approximately 2 dB. The estimated current noise contribution from South Mission Road at the remainder parcel is approximately 58 dB. Projected future volumes on South Mission Road are almost identical to existing volumes. The build-out noise contribution from South Missions Road at the remainder parcel is therefore assumed to be 58 dB CNEL.

The observed traffic conditions for the 1,560 vehicles observed on South Mission Road were as follows:

Autos – 92.6%	Medium Trucks – 3.8%	Heavy Trucks – 3.6%
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At 30 mph (because of slowing at the nearby traffic signal), the predicted noise level at the measurement site is 58 dB LEQ, or 2 dB higher than observed. The observed reading equates to 1,000 vehicles on South Mission Road. A downward adjustment of traffic volumes on South Mission Road was therefore made in assessing future on-site noise exposure

NOISE IMPACT

THRESHOLDS OF SIGNIFICANCE

Noise impacts are considered significant if the project creates a substantial increase in noise in a quiet environment, or were to cause the 60 dB CNEL standard to be exceeded. A measurable contribution in an already noisy environment would be similarly significant. The significance thresholds for operational impacts from a residential development are thus as follows:

- Exposes on-site residents to levels exceeding 60dB CNEL in usable outdoor space.
- Causes levels to exceed 60 dB CNEL in off-site uses not currently exceeding 60 dB CNEL.
- Causes a +3 dB CNEL increase in quiet areas.
- Causes a +1 dB CNEL increase in noisy areas.

Temporary noise levels during construction that exceed County ordinance levels would be a significant temporary impact. Construction noise that adversely impacts a noise-sensitive biotic habitat would also be considered a significant short-term impact.

CONSTRUCTION NOISE

Noise impacts could be considered significant if “unusual” construction practice created above average noise levels, if substantial truck volumes create violations of the County General Plan noise standard of 60 dB(A) CNEL in quiet areas, or if there were adjacent noise-sensitive avian habitats where construction noise could cause the 60dB(A) Leq noise protection standard to be exceeded. “Unusual” in this project context might be rock drilling, breaking or crushing.

There is no documented presence of any rare or threatened bird species present on or near the project site. It is intended to balance cut-and-fill on-site such that construction truck traffic will be minimal. The reference noise level from one truck load of material in/out of the site is 53 dB(A) Leq at 50 feet from the centerline. It would require five truck loads per hour (ten Trips), or 120 loads per day to equal 60 dB(A) CNEL if the traffic occurs between 7:00a.m. to 7:00 p.m. Although the exact volume of truck traffic cannot be predicted with certainty, it will be much, much smaller than 120 loads of material per day. The maximum estimated daily truck volume is ten loads of material per day (Mingo, 2005). The noise level from 20 trips per day (10in / 10out) is 50 dB(A) CNEL at 50 feet from the roadway centerline. County General Plan noise standards will not be exceeded by maximum daily truck traffic.

The site contains some underlying rock. No rock processing is anticipated because preliminary grading has been completed. Very little cut and/or fill is needed for finish grading. No “unusual” construction activity noise is anticipated.

OFF-SITE TRAFFIC NOISE IMPACT

The proposed project (four lots plus the remainder parcel) will generate 60 daily trips (12 per lot). As a worse-case, it was assumed by the traffic engineer that all project traffic would depart/arrive from the west (no eastbound movement on Palomino), and similarly that all 60 trips would turn south on Old Stage Road (no northbound movement on Old Stage) A 50/50 split on South Mission Road was assumed.

Traffic noise calculations were made for the following average daily traffic (ADT):

Roadway/Segment	Existing	Existing + Cumulative	Existing + Cumulative + Project
South Mission Road			
S. Main - Old Stage	27,000	27,766	27,796
Old Stage - Peppertree	26,598	27,336	27,366
Old Stage Road			
South of Palomino Road	2,544	4,126	4,186
Palomino Road			
East of Old Stage	1,073	1,655	1,715

Traffic noise levels were calculated using the following input assumptions:

Roadway	Traffic Mix*			Speed (mph)
	Auto (%)	Medium (%)	Heavy (%)	
South Mission	92	5	3	50
Old Stage Road	95	4	1	30
Palomino Road	95	3	2	40

* Traffic mix data was provided by San Diego County staff. The observed distribution on November 30, 2005, found a slightly different truck distribution on South Mission Road, and no medium or heavy trucks on Old Stage or Palomino Roads except for one UPS van in an hour. The County traffic mix recommendation was used in the analysis. The South Mission Road noise contribution upon the project site is much less than predicted from these input parameters because travel speeds are substantially less from queuing effects at the nearby traffic signal, and structures and grade separation interrupt the direct line of sight.

A reference noise level was calculated for each of the four roadway segments based upon the assigned vehicle mix and speed. The noise level for each of the three scenarios (existing, existing + growth, existing plus growth plus project) was calculated based upon a logarithmic ratio of scenario to reference ADT. The model input parameters were as follow for calculating the CNEL at 50 feet from centerline:

	<u>Vehicles Per Hour</u>			<u>Speed</u>	<u>ADT</u>
	<u>Auto</u>	<u>Medium</u>	<u>Heavy</u>	<u>(mph)</u>	<u>(daily)</u>
South Mission Road					
North of Old Stage_Rd	2,557	139	83	50	27,796
South of Old Stage Rd	2,518	137	82	50	27,366
Old Stage Road	665	28	7	30	7,000
Palomino Road	570	18	12	40	6000

The reference noise levels, and the distance to the 60 dB CNEL contour location under direct line-of-sight conditions, are as follows:

	<u>CNEL at 50 feet to Centerline (dB)</u>	Distance to 60 CNEL	
		"Hard" (feet)	"Soft" (feet)
-			
South Mission Road		-	
North of Old Stage Rd	75.4	1,750	535
South of Old Stage Rd	75.4	1,730	530
Old Stage Road	63.9	120	90
Palomino Road	66	200	125

The theoretical contour distance of the 60 dB CNEL contour covers the entire project site under acoustically "hard" conditions with a clear line-of-sight assumption. A noise protection easement should thus be established over the entire site because portions of the site may experience exterior noise levels exceeding 60dB CNEL. With lower travel speeds on South Mission Road, with intervening shielding due to structures separating the site from South Mission Road, and with on-site homes shielding the backyards from local roadway noise, the actual noise projection requirements will be substantially reduced from the theoretical worst-case maxima shown above.

The maximum reference noise levels were adjusted to be consistent with traffic volumes shown in the project traffic study to predict the following noise levels (dB CNEL at 50 feet to centerline):

Roadway/Segment	Existing	Existing + Cumulative	Existing + Cumulative + Project
South Mission Road			
S. Main - Old Stage	75.3	75.4	75.4
Old Stage - Peppertree	75.3	75.4	75.4
Old Stage Road			
South of Palomino Road	59.5	61.6	61.6
Palomino Road			
East of Old Stage	58.5	60.4	60.5

The noise level increases due to the proposed project are negligible in comparison to the effects of cumulative growth seen as follows:

Roadway/Segment	Traffic Noise Level Increases (dB CNEL)		
	Cumulative Only	Project Only	Cumulative + Project
South Mission Road			
S. Main - Old Stage	+0.1	+0.0	+0.1
Old Stage - Peppertree	+0.1	+0.0	+0.1
Old Stage Road			
South of Palomino Road	+2.1	+0.0	+2.1
Palomino Road			
East of Old Stage	+1.9	+0.1	+2.0

Noise level increases due to growth on area-wide roadways would be considered significant if they increase noise levels by +1dB on already noise streets (South Mission Road), or by +3 dB on quiet streets (Old Stage or Palomino). The above data show that neither cumulative growth nor the project would cause the significance thresholds to be exceeded.

ON-SITE NOISE EXPOSURE

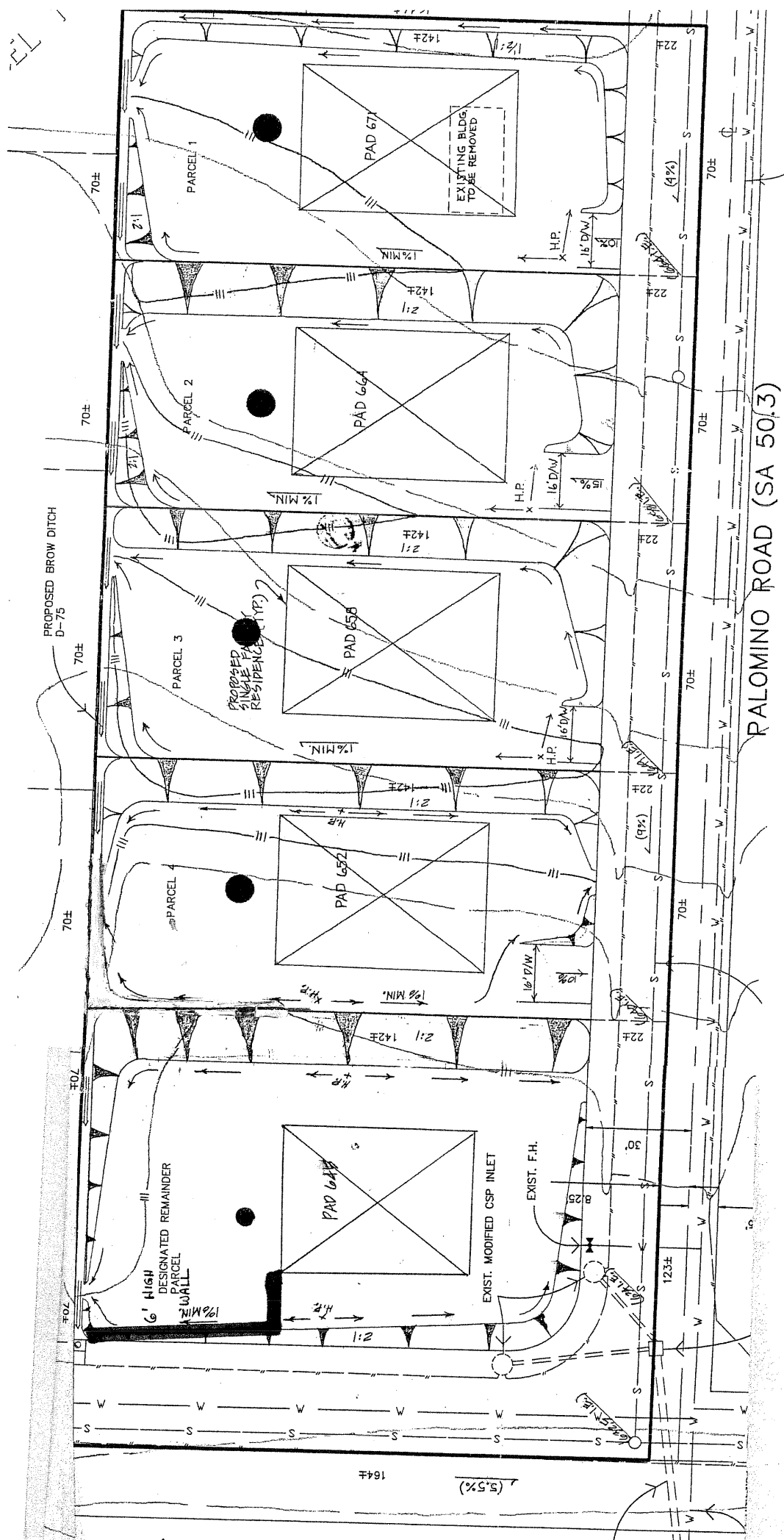
Measurement data showed that baseline noise levels on Parcel 4 exceed County standards in usable rear-yard space from combined local street traffic and contributions from partly shielded South Mission Road.. Noise modeling data shows that all lots could experience exterior levels exceeding 60 dB CNEL from combined local traffic plus the South Mission Road contribution under theoretical worse-case conditions. A more detailed modeling study was therefore undertaken that incorporates probable locations of structures, actual terrain, and shielding effects of grade separation of future homes. The Caltrans SOUND 32 computer model was used to calculate the noise contribution from future traffic on Old Stage, Palomino Roads and an adjusted contribution from South Mission Road. An analysis location was selected at 10 feet behind the prototype footprint for each house. The analysis was initially conducted without a home on the remainder parcel because the current proposal is for four residences on Parcels 1 – 4. The analysis was then modified to incorporate the remainder parcel. The analysis locations are shown in Exhibit 1. The SOUND32 computer model input/output data sheets are included in the appendix. The on-site noise levels on the patios of each of the four homes without any remainder parcel development are calculated as follows:

Lot 4	52 dB CNEL
Lot 3	48 dB CNEL
Lot 2	46 dB CNEL
Lot 1	46 dB CNEL

Noise standards are met on the rear patios of all four homes without any additional noise mitigation requirements.

Exhibit 1

SOUND32 Analysis Locations



The development of the remainder parcel could create a receiver closer to both Old Stage Road and South Mission Road that is not as well shielded by grade separation or distance. An additional SOUND32 analysis was therefore conducted with a house built on this parcel. A side yard wall at six (6) feet above pad grade was therefore assumed as shown in Exhibit 1.

The noise exposures at the five analysis locations are as follows:

Remainder Parcel	-	54 dB CNEL
Parcel 4	-	48 dB CNEL
Parcel 3	-	47 dB CNEL
Parcel 2	-	46 dB CNEL
Parcel 1	-	46 dB CNEL

A six-foot high side yard wall would allow County noise standards to be met at the rear patio of a house that could be built on the remainder parcel.

Upstairs façade noise loading would be unscreened by the building, and would thus be much higher than on the rear patio. The front facades of each house would be located at approximately 50 feet from the Palomino Road centerline. The calculated noise level due to local traffic is 66 dB CNEL. Background noise levels from South Mission Road could be as high as 62 dB CNEL at the building façade. Their combined level may be 67-68 dB CNEL. It would require 22-23 dB of structural attenuation to achieve a 45 dB CNEL interior level. Reductions of 22-23 dB require closure of dual-paned windows and supplemental ventilation to allow such closure. Structural noise reduction of almost 30 dB is achieved with closed production-grade windows such that interior standards will be met with a large margin of safety.

MITIGATION

If the remainder parcel is developed into a residence, a 6-foot high masonry wall shall be constructed along a portion of the western property line of the Remainder Parcel to achieve 60 dB CNEL in back yards. Use of privacy wall on other parcels is optional.

Dual-paned upstairs bedrooms shall be provided with supplemental source of ventilation air to allow for window closure needed to achieve a 45 dB CNEL interior exposure.

APPENDIX

Noise Measurement Detail

SOUND 32 Input / Output

No Remainder Parcel Development

With Remainder Parcel Development

MEASUREMENT DETAIL: SEPTEMBER 16-17, 2004 – PARCEL 1

<u>Time</u>	<u>Leq</u>	<u>Lmax</u>	<u>Lmin</u>
<u>19-20</u>	<u>55</u>	<u>73</u>	<u>47</u>
<u>20-21</u>	<u>56</u>	<u>77</u>	<u>45</u>
<u>21-22</u>	<u>50</u>	<u>67</u>	<u>45</u>
<u>22-23</u>	<u>47</u>	<u>58</u>	<u>44</u>
<u>23-24</u>	<u>47</u>	<u>62</u>	<u>44</u>
<u>00-01</u>	<u>45</u>	<u>56</u>	<u>44</u>
<u>01-02</u>	<u>45</u>	<u>62</u>	<u>44</u>
<u>02-03</u>	<u>46</u>	<u>60</u>	<u>44</u>
<u>03-04</u>	<u>46</u>	<u>60</u>	<u>44</u>
<u>04-05</u>	<u>46</u>	<u>60</u>	<u>44</u>
<u>05-06</u>	<u>48</u>	<u>58</u>	<u>44</u>
<u>06-07</u>	<u>52</u>	<u>67</u>	<u>45</u>
<u>07-08</u>	<u>55</u>	<u>67</u>	<u>47</u>
<u>08-09</u>	<u>60</u>	<u>78</u>	<u>47</u>
<u>09-10</u>	<u>55</u>	<u>71</u>	<u>47</u>
<u>10-11</u>	<u>57</u>	<u>75</u>	<u>47</u>
<u>11-12</u>	<u>57</u>	<u>75</u>	<u>46</u>
<u>12-13</u>	<u>54</u>	<u>74</u>	<u>48</u>
<u>13-14</u>	<u>54</u>	<u>69</u>	<u>48</u>
<u>14-15</u>	<u>56</u>	<u>72</u>	<u>49</u>
<u>15-16</u>	<u>56</u>	<u>79</u>	<u>49</u>
<u>16-17</u>	<u>54</u>	<u>69</u>	<u>48</u>
<u>17-18</u>	<u>54</u>	<u>65</u>	<u>48</u>
<u>18-19</u>	<u>53</u>	<u>72</u>	<u>48</u>

MEASUREMENT DETAIL: SEPTEMBER 16-17, 2004 – PARCEL 4

<u>Time</u>	<u>Leq</u>	<u>Lmax</u>	<u>Lmin</u>
<u>19-20</u>	<u>59</u>	<u>77</u>	<u>45</u>
<u>20-21</u>	<u>58</u>	<u>76</u>	<u>43</u>
<u>21-22</u>	<u>56</u>	<u>71</u>	<u>44</u>
<u>22-23</u>	<u>54</u>	<u>72</u>	<u>41</u>
<u>23-24</u>	<u>51</u>	<u>70</u>	<u>40</u>
<u>00-01</u>	<u>49</u>	<u>68</u>	<u>38</u>
<u>01-02</u>	<u>48</u>	<u>68</u>	<u>39</u>
<u>02-03</u>	<u>48</u>	<u>69</u>	<u>38</u>
<u>03-04</u>	<u>49</u>	<u>69</u>	<u>37</u>
<u>04-05</u>	<u>51</u>	<u>69</u>	<u>38</u>
<u>05-06</u>	<u>57</u>	<u>74</u>	<u>39</u>
<u>06-07</u>	<u>60</u>	<u>74</u>	<u>39</u>
<u>07-08</u>	<u>62</u>	<u>76</u>	<u>47</u>
<u>08-09</u>	<u>62</u>	<u>76</u>	<u>46</u>
<u>09-10</u>	<u>60</u>	<u>74</u>	<u>46</u>
<u>10-11</u>	<u>60</u>	<u>72</u>	<u>46</u>
<u>11-12</u>	<u>60</u>	<u>81</u>	<u>45</u>
<u>12-13</u>	<u>59</u>	<u>76</u>	<u>45</u>
<u>13-14</u>	<u>59</u>	<u>72</u>	<u>45</u>
<u>14-15</u>	<u>61</u>	<u>76</u>	<u>47</u>
<u>15-16</u>	<u>61</u>	<u>78</u>	<u>45</u>
<u>16-17</u>	<u>61</u>	<u>76</u>	<u>45</u>
<u>17-18</u>	<u>61</u>	<u>79</u>	<u>46</u>
<u>18-19</u>	<u>60</u>	<u>81</u>	<u>45</u>

270 Palomino - No Remainder Parcel

T-Old Stage, 1

665 , 30 , 28 , 30 , 7 , 30

T-Palomino, 2

570 , 40 , 18 , 40 , 12 , 40

T-Mission Road (partial), 3

920 , 30 , 40 , 30 , 40 , 30

L-, 1

N, 62., 260, 640,

N, 62., -180, 635,

L-, 2

N, 62., 16, 638,

N, 365., 16, 670,

N, 490., 16, 675,

N, 700., 16, 680,

L-, 3

N, -90., 260, 630,

N, -90., -180, 630,

B-Slope 1, 1 , 1 , 0 , 0

184., 39, 645, 652,

184., 180, 645, 652,

B-Slope 2, 2 , 1 , 0 , 0

252., 38, 652, 658,

255., 164, 652, 658,

B-Slope 3, 3 , 1 , 0 , 0

322., 38, 658, 664,

325., 161, 658, 664,

B-Slope 4, 4 , 1 , 0 , 0

392., 38, 664, 671,

395., 164, 664, 671,

B-House 4, 5 , 2 , 0 , 0

198., 128, 652, 677,

240., 128, 652, 677,

240., 70, 652, 677,

198., 70, 652, 677,

198., 128, 652, 677,

B-House 3, 6 , 2 , 0 , 0

268., 128, 658, 683,

310., 128, 658, 683,

310., 70, 658, 683,

268., 70, 658, 683,

268., 128, 658, 683,

B-House 2, 7 , 2 , 0 , 0

336., 128, 664, 689,

378., 128, 664, 689,

378., 70, 664, 689,

336., 70, 664, 689,

336., 128, 664, 689,

B-House 1, 8 , 2 , 0 , 0

411., 128, 671, 696,

453., 128, 671, 696,

453., 70, 671, 696,

411., 70, 671, 696,

411., 128, 671, 696,

R, 1 , 67 , 500

219, 138, 657., R4

R, 2 , 67 , 500

289,138,663.,R3
R, 3 , 67 ,500
357,138,669.,R2
R, 4 , 67 ,500
432,138,676.,R1
C,C

TITLE:
270 Palomino - No Remainder Parcel

1

BARRIER DATA

BAR ELE	0	1	BARRIER HEIGHTS							BAR ID	LENGTH	TYPE
1	-	7.*								B1 P1	141.0	□□□□□□□□□□□□
2	-	6.*								B2 P1	126.0	□□□□□□□□□□□□
3	-	6.*								B3 P1	123.0	□□□□□□□□□□□□
4	-	7.*								B4 P1	126.0	□□□□□□□□□□□□
5	-	25.*								B5 P1	42.0	□□□□□□□□□□□□
6	-	25.*								B5 P2	58.0	□□□□□□□□□□□□
7	-	25.*								B5 P3	42.0	□□□□□□□□□□□□
8	-	25.*								B5 P4	58.0	□□□□□□□□□□□□
9	-	25.*								B6 P1	42.0	□□□□□□□□□□□□
10	-	25.*								B6 P2	58.0	□□□□□□□□□□□□
11	-	25.*								B6 P3	42.0	□□□□□□□□□□□□
12	-	25.*								B6 P4	58.0	□□□□□□□□□□□□
13	-	25.*								B7 P1	42.0	□□□□□□□□□□□□
14	-	25.*								B7 P2	58.0	□□□□□□□□□□□□
15	-	25.*								B7 P3	42.0	□□□□□□□□□□□□
16	-	25.*								B7 P4	58.0	□□□□□□□□□□□□
17	-	25.*								B8 P1	42.0	□□□□□□□□□□□□
18	-	25.*								B8 P2	58.0	□□□□□□□□□□□□
19	-	25.*								B8 P3	42.0	□□□□□□□□□□□□
20	-	25.*								B8 P4	58.0	□□□□□□□□□□□□
	0	1	2	3	4	5	6	7				

1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R4	67.	500.	51.5
2	R3	67.	500.	47.8
3	R2	67.	500.	46.4
4	R1	67.	500.	46.3

BARRIER HEIGHT INDEX FOR EACH BARRIER SECTION
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
CORRESPONDING BARRIER HEIGHTS FOR EACH SECTION
7. 6. 6. 7.25.25.25.25.25.25.25.25.25.25.25.25.25.25.

270 Palomino
T-Old Stage, 1
665 , 30 , 28 , 30 , 7 , 30
T-Palomino, 2
570 , 40 , 18 , 40 , 12 , 40
T-Mission Road (partial), 3
920 , 30 , 40 , 30 , 40 , 30
L-, 1
N,62.,260,640,
N,62.,-180,635,
L-, 2
N,62.,16,638,
N,365.,16,670,
N,490.,16,675,
N,700.,16,680,
L-, 3
N,-90.,260,630,
N,-90.,-180,630,
B-Slope 1, 1 , 1 , 0 , 0
184.,39,645,652,
184.,180,645,652,
B-Slope 2, 2 , 1 , 0 , 0
252.,38,652,658,
255.,164,652,658,
B-Slope 3, 3 , 1 , 0 , 0
322.,38,658,664,
325.,161,658,664,
B-Slope 4, 4 , 1 , 0 , 0
392.,38,664,671,
395.,164,664,671,
B-House 4, 5 , 2 , 0 , 0
198.,128,652,677,
240.,128,652,677,
240.,70,652,677,
198.,70,652,677,
198.,128,652,677,
B-House 3, 6 , 2 , 0 , 0
268.,128,658,683,
310.,128,658,683,
310.,70,658,683,
268.,70,658,683,
268.,128,658,683,
B-House 2, 7 , 2 , 0 , 0
336.,128,664,689,
378.,128,664,689,
378.,70,664,689,
336.,70,664,689,
336.,128,664,689,
B-House 1, 8 , 2 , 0 , 0
411.,128,671,696,
453.,128,671,696,
453.,70,671,696,
411.,70,671,696,
411.,128,671,696,
B-Remainder House, 9 , 2 , 0 , 0
113.,70,645,670,
173.,70,645,670,

173.,128,645,670,
113.,128,645,670,
113.,70,645,670,
B-Remainder Wall, 10 , 2 , 0 ,0
95.,180,645,651,
96.,128,645,651,
113.,128,645,651,
R, 1 , 67 ,500
219,138,657.,R4
R, 2 , 67 ,500
289,138,663.,R3
R, 3 , 67 ,500
357,138,669.,R2
R, 4 , 67 ,500
432,138,676.,R1
R, 5 , 67 ,500
143,138,650.,Remainde
C,C

TITLE:

270 Palomino

1

BARRIER DATA

BAR ELE	0	1	BARRIER HEIGHTS					6	7	BAR ID	LENGTH	TYPE
1	-	7.*								B1 P1	141.0	□□□□□□□□□□□□
2	-	6.*								B2 P1	126.0	□□□□□□□□□□□□
3	-	6.*								B3 P1	123.0	□□□□□□□□□□□□
4	-	7.*								B4 P1	126.0	□□□□□□□□□□□□
5	-	25.*								B5 P1	42.0	□□□□□□□□□□□□
6	-	25.*								B5 P2	58.0	□□□□□□□□□□□□
7	-	25.*								B5 P3	42.0	□□□□□□□□□□□□
8	-	25.*								B5 P4	58.0	□□□□□□□□□□□□
9	-	25.*								B6 P1	42.0	□□□□□□□□□□□□
10	-	25.*								B6 P2	58.0	□□□□□□□□□□□□
11	-	25.*								B6 P3	42.0	□□□□□□□□□□□□
12	-	25.*								B6 P4	58.0	□□□□□□□□□□□□
13	-	25.*								B7 P1	42.0	□□□□□□□□□□□□
14	-	25.*								B7 P2	58.0	□□□□□□□□□□□□
15	-	25.*								B7 P3	42.0	□□□□□□□□□□□□
16	-	25.*								B7 P4	58.0	□□□□□□□□□□□□
17	-	25.*								B8 P1	42.0	□□□□□□□□□□□□
18	-	25.*								B8 P2	58.0	□□□□□□□□□□□□
19	-	25.*								B8 P3	42.0	□□□□□□□□□□□□
20	-	25.*								B8 P4	58.0	□□□□□□□□□□□□
21	-	25.*								B9 P1	60.0	□□□□□□□□□□□□
22	-	25.*								B9 P2	58.0	□□□□□□□□□□□□
23	-	25.*								B9 P3	60.0	□□□□□□□□□□□□
24	-	25.*								B9 P4	58.0	□□□□□□□□□□□□
25	-	6.*								B10 P1	52.0	□□□□□□□□□□□□
26	-	6.*								B10 P2	17.0	□□□□□□□□□□□□

1

REC	REC	ID	DNL	PEOPLE	LEQ(CAL)
1	R4		67.	500.	48.5
2	R3		67.	500.	47.0
3	R2		67.	500.	45.9
4	R1		67.	500.	46.0

5 Remainde 67. 500. 54.0

BARRIER HEIGHT INDEX FOR EACH BARRIER SECTION

1
1

CORRESPONDING BARRIER HEIGHTS FOR EACH SECTION

7. 6. 6. 7.25.25.25.25.25.25.25.25.25.25.25.25.25.25.25.25. 6.
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